

Turning Trash Into Cash

Faced with the prospect of having to close its landfills in seven years, Rapid City, S.D., took an innovative step: composting of its biosolids and municipal solid waste. Implementing a recycling and composting program extends the life of the landfill to 2053.

The city has a 365-acre, \$7.2 million site that combines landfill, yard trimmings composting, materials recovery, and municipal solid waste/biosolids composting, according to Barbara Petroff, project manager for USFilter's IPS Composting System, which was used in the facility.

The organic residuals begin their journey through the process in the materials recovery facility's receipt area. Automated collection trucks deliver the waste and recyclables to the materials recovery facility, where the solid waste is conveyed through a sorting station to one of two rotating drums that mix the solid waste with liquid biosolids from the city's water reclamation facility. From the mixing drums, the solid waste passes through screens that remove additional non-compostable materials.

The organic portion is conveyed from the drums and screens to the composting building, where a front-end loader places the material into the front end of the long concrete bays. The material matures inside the bays for 29 days.

In the IPS Composting System, two agitators are used to mix the composting material.

The composting building uses the USFilter IPS composting system, an automated system that includes two agitator mixing machines and temperature, aeration, and moisture control. Each day, the agitators travel through the bays to mix the material and move it to the far end of the bay. The system is designed to convert 213 tons per day of pre-processed solid wastes and biosolids into compost, according to Petroff. The system composts wastewater biosolids, food, paper, yard waste, and other organic residuals. A chemical scrubber and biofilter treat the processed air generated at the composting building to remove odors.

At the end of the 29-day maturation period, the composting material meets the U.S. Environmental Protection Agency's regulatory requirements for pathogen reduction, Petroff said.

After the composting or maturation phase, the material is transferred to a covered, aerated curing building, where it remains for an additional 30 days before moving through the finishing building. In the finishing process, the matured compost is screened, has stones removed, and is tested for quality before it's distributed for use.

The composting is expected to extend the city's landfill life by about 30 years, and alleviates the need for the city to purchase 1,100 more acres of land for farming biosolids, according to Petroff. In addition, Rapid City sells the compost for roughly \$20 to \$30 per cubic yard, Petroff said.

The product is used for top dressing of fields and golf courses, nursery potting soil, reclaiming land, stormwater management, and other applications. Proceeds from the sale of the compost help offset the cost of operating the compost facility, so that the facility uses no tax dollars to maintain operations.

From:

American Society of Mechanical Engineers

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